WHAT IS CLAIMED IS:

1. A leak power ratio detection circuit for detecting a leak power to an adjacent channel of a radio frequency signal produced by a transmission circuit including at least power amplifier means for power amplification of the radio frequency signal, the leak power ratio detection circuit comprising:

squaring means for squaring the radio frequency signal produced by the transmission circuit and producing a low-frequency component;

a first filter for extracting a spectrum component corresponding to a desired channel, from that portion of the low-frequency component of the squared result obtained by the squaring means, which occurs with a center thereof being present near a DC (Direct Current);

a second filter for extracting, from the squared result of the squaring means, a spectrum component corresponding to spectrum spreading due to a distortion in the transmission circuit; and

leak power ratio detection means for detecting a ratio of the leak power to the adjacent channel of the radio frequency signal, on the basis of a level of the spectrum component extracted by the first filter and a level of the spectrum component extracted by the second filter.

2. The leak power ratio detection circuit

according to claim 1, wherein the squaring means squares the radio frequency signal using multiplier means for multiplying at least two signals.

3. The leak power ratio detection circuit according to claim 1, wherein the squaring means squares the radio frequency signal using a non-linear device having a second-order distortion coefficient.

4. The leak power ratio detection circuit according to claim 1, wherein the leak power ratio detection means comprises:

first level detection means for detecting an effective value of the spectrum component extracted by the first filter;

second level detection means for detecting an effective value of the spectrum component extracted by the second filter; and

division means for detecting the ratio of the leak power to the adjacent channel of the radio frequency signal, on the basis of a ratio between the effective value detected by the first level detection means and the effective value detected by the second level detection means.

5. The leak power ratio detection circuit according to claim 1, wherein the leak power ratio detection means comprises:

first level detection means for detecting a decibel value of the level of the spectrum component

extracted by the first filter;

second level detection means for detecting a decibel value of the level of the spectrum component extracted by the second filter; and

5   subtraction means for detecting the ratio of the leak power to the adjacent channel of the radio frequency signal by performing a subtraction between the decibel value detected by the first level detection means and the decibel value detected by the second

10   level detection means.

6.   A mobile communication terminal having, in a transmission system, power amplifier means for power-amplifying at least a radio frequency signal, the terminal comprising:

15   branching means for branching a portion of the power-amplified radio frequency signal produced by the power amplifier means;

squaring means for squaring the radio frequency signal branched by the branching means and producing a

20   low-frequency component;

a first filter for extracting a spectrum component corresponding to a desired channel, from that portion of the low-frequency component of the squared result obtained by the squaring means, which occurs with a

25   center thereof being present near a DC (Direct Current);

a second filter for extracting, from the squared

result of the squaring means, a spectrum component corresponding to spectrum spreading due to a distortion in the transmission system;

leak power ratio detection means for detecting a ratio of a leak power to an adjacent channel of the radio frequency signal, on the basis of a level of the spectrum component extracted by the first filter and a level of the spectrum component extracted by the second filter; and

power amplification control means for controlling supply power to the power amplifier means, thereby making the ratio of the leak power detected by the leak power ratio detection means coincide with a predetermined level.

7. The mobile communication terminal according to claim 6, wherein the squaring means squares the radio frequency signal using multiplier means for multiplying at least two signals.

8. The mobile communication terminal according to claim 6, wherein the squaring means squares the radio frequency signal using a non-linear device having a second-order distortion coefficient.

9. The mobile communication terminal according to claim 6, wherein the leak power ratio detection means comprises:

first level detection means for detecting an effective value of the spectrum component extracted by

the first filter;

second level detection means for detecting an effective value of the spectrum component extracted by the second filter; and

5 comparison means for detecting the ratio of the leak power to the adjacent channel of the radio frequency signal, on the basis of a ratio between the effective value detected by the first level detection means and the effective value detected by the second

10 level detection means.

10. The mobile communication terminal according to claim 6, wherein the leak power ratio detection means comprises:

first level detection means for detecting a

15 decibel value of the level of the spectrum component extracted by the first filter;

second level detection means for detecting a decibel value of the level of the spectrum component extracted by the second filter; and

20 subtraction means for detecting the ratio of the leak power to the adjacent channel of the radio frequency signal by performing a subtraction between the decibel value detected by the first level detection means and the decibel value detected by the second

25 level detection means.

11. The mobile communication terminal according to claim 6, further comprising control means for

controlling a maximum power level of the radio
frequency signal to be transmitted, on the basis of the
level of the spectrum component extracted by the first
filter.

5   12. A control circuit for a mobile communication
terminal having, in a transmission system, power
amplifier means for power-amplifying at least a radio
frequency signal, the terminal comprising:

branching means for branching a portion of the
10   power-amplified radio frequency signal produced by the
power amplifier means;

squaring means for squaring the radio frequency
signal branched by the branching means and producing a
low-frequency component;

15   a first filter for extracting a spectrum component
corresponding to a desired channel, from that portion
of the low-frequency component of the squared result
obtained by the squaring means, which occurs with a
center thereof being present near a DC (Direct
20   Current);

a second filter for extracting, from the squared
result of the squaring means, a spectrum component
corresponding to spectrum spreading due to a distortion
in the transmission system;

25   leak power ratio detection means for detecting a
ratio of a leak power to an adjacent channel of the
radio frequency signal, on the basis of a level of the

spectrum component extracted by the first filter and a level of the spectrum component extracted by the second filter; and

power amplification control means for controlling supply power to the power amplifier means, thereby making the ratio of the leak power detected by the leak power ratio detection means coincide with a predetermined level.

13. The control circuit for a mobile communication terminal according to claim 12, wherein the squaring means squares the radio frequency signal using multiplier means for multiplying at least two signals.

14. The control circuit for a mobile communication terminal according to claim 12, wherein the squaring means squares the radio frequency signal using a non-linear device having a second-order distortion coefficient.

15. The control circuit for a mobile communication terminal according to claim 12, wherein the leak power ratio detection means comprises:

first level detection means for detecting an effective value of the spectrum component extracted by the first filter;

second level detection means for detecting an effective value of the spectrum component extracted by the second filter; and

comparison means for detecting the ratio of the

leak power to the adjacent channel of the radio frequency signal, on the basis of a ratio between the effective value detected by the first level detection means and the effective value detected by the second level detection means.

16. The control circuit for a mobile communication terminal according to claim 12, wherein the leak power ratio detection means comprises:

first level detection means for detecting a decibel value of the level of the spectrum component extracted by the first filter;

second level detection means for detecting a decibel value of the level of the spectrum component extracted by the second filter; and

subtraction means for detecting the ratio of the leak power to the adjacent channel of the radio frequency signal by performing a subtraction between the decibel value detected by the first level detection means and the decibel value detected by the second level detection means.

17. The control circuit for a mobile communication terminal according to claim 12, further comprising control means for controlling a maximum power level of the radio frequency signal to be transmitted, on the basis of the level of the spectrum component extracted by the first filter.